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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/773,106	01/31/2001	Tomokazu Kakumoto	15162/03080	5452

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EXAMINER

YE, LIN

ART UNIT PAPER NUMBER

2615

DATE MAILED: 06/24/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b> 09/773,106	<b>Applicant(s)</b> KAKUMOTO ET AL.	
	<b>Examiner</b> Lin Ye	<b>Art Unit</b> 2615	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 18 April 2005.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-16 is/are pending in the application.
- 4a) Of the above claim(s) 3-9 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1 and 2 is/are rejected.
- 7) ☒ Claim(s) 10-16 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 31 January 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |   |   |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                        | 4) <input type="checkbox"/> Interview Summary (PTO-413)                     |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)    | Paper No(s)/Mail Date. _____  |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____   | 6) <input type="checkbox"/> Other: _____                                    |

## **DETAILED ACTION**

### ***Response to Arguments***

1. Applicant's arguments filed 4/18/05 have been fully considered but they are not persuasive as to claims 1-2.

For claims 1-2, the applicant argues that Kuroda reference does not teach “wherein the bias voltage is equal for all the pixels”, because Kuroda reference teaches applying different biases to individual pixels. The examiner disagrees. The Kuroda reference clearly discloses in Figures 4-5, the image-sensing device is provided with **only one** operational amplifier (71) that is shared between each pixel; the output bias voltage of the operational amplifier (71) is applied through the Tr (73) and Tr (74) to the pixels 23; by such arrangement, the electrical potential of the region (24) is set such that the SFC output at reset time **equals** the reference signal (85 as shown in Figure 5); and Such operations are performed on **every pixel** (See Col. 11, lines 37-45). For this reason, the bias voltage output from the operational amplifier 71 is equal for all the pixels.

### ***Claim Rejections - 35 USC § 103***

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

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3. Claim 1-2 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kuroda et al. U.S. 6,469,740 in view of Collins et al. U.S. 6,507,519.

Referring to claim 1, the Kuroda reference discloses in Figures 4-5, an image-sensing device (See Col. 7, lines 1-5) comprising: a plurality of pixels (picture elements 23) that generate an electric signal proportional to an amount of incident light and then output the electric signal (See Col. 7, lines 8-13); and a level adjuster (the operational amplifier 71 in Figure 4 and reset transistor 73 together are considered as a level adjuster; e.g., during the reset operation period, the output electric signal of pixel at output node 41 can be adjusted with high accuracy because feedback by the operational amplifier 71, see Col. 11, lines 32-40) that adjusts a level of the electric signal output from the pixels by adjusting according to the electric signal output from the pixels a bias voltage fed to the pixels (both output voltage of the operational amplifier 71 is a bias voltage fed to the pixel 23, see Col. 8, lines 31-34), wherein the bias voltage is equal for all the pixels (the image-sensing device is provided with only one operational amplifier 71 that is shared between each pixel; the output bias voltage of the operational amplifier 71 is applied through the Tr 73 and Tr 74 to the pixels 23; by such arrangement, the electrical potential of the region 24 is set such that the SFC output at reset time **equals** the reference signal 85 as shown in Figure 5; and Such operations are performed on **every pixel**, see Col. 11, lines 37-45. For this reason, the bias voltage output from the operational amplifier 71 is equal for all the pixels). However, the Kuroda reference does not explicitly state the electric signal generated by the plurality of pixels (23) as an analog signal that is natural-logarithmically proportional to the amount of incident light.

The Collins reference teaches in Figures 2-3, an image-sensing device (See Col. 5, lines 41) comprising: a plurality of pixels (each pixels show in Figure 3) that generate an electric signal proportional to an amount of incident light and then output the electric signal ( $V_x$ ) as an analog signal that is natural-logarithmically proportional to the amount of incident light (See Col. 5, lines 65-66). The Collins reference is evidenced that one of ordinary skill in the art at the time of the invention to see more advantages when the imaging-sensing device is a logarithmic type imaging sensor so that has very wide dynamic range with makes the imaging-sensing device suitable for imaging external scenes (See Col. 6, lines 15-22). For that reason, it would have been obvious one having ordinary skill in the art at the time of the invention was made to modify the imaging-sensing device of Kuroda by providing a logarithmic type imaging sensor for generating the output imaging electric signal as an analog signal that is natural-logarithmically proportional to the amount of incident light as taught by Collins.

Referring to claim 2, the Kuroda reference discloses wherein the pixels are arranged in a matrix so as to form an area sensor as a whole as shown in Figure 4.

***Allowable Subject Matter***

4. Claims 10-16 objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Please see the reason for allowance from the last examiner's Office Action mailed on 1/13/05.

***Conclusion***

5. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.


6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Lin Ye whose telephone number is (571) 272-7372. The examiner can normally be reached on Mon-Fri 8:00AM-5:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David L. Ometz can be reached on (571) 272-7593. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Lin Ye  
June 16, 2005



DAVID L. OMETZ  
PRIMARY EXAMINER